Structures and Landmarks Data Exchange Standard

Part of the Public Safety Theme

Version 0.9
Second Public Review & Comment Draft

Workgroup of the Idaho Public Safety TWG

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1. INTRODUCTION

This document describes the specifications for the dataset referred to as "Structures Framework." This standard is intended to facilitate integration and sharing of structures data across Idaho and to enhance dissemination and use of accurate, seamless, and up-to-date structure information. This standard is vital since many government and private entities have business needs for Structures Framework. Uses of Structures Framework include 911 support, disaster planning, building inspections/appraisals, economic analysis, and facilities management.

The Structures Framework includes all structures and addresses, as well as landmarks; this includes *all* the parts of the Venn diagram shown in Figure 1.

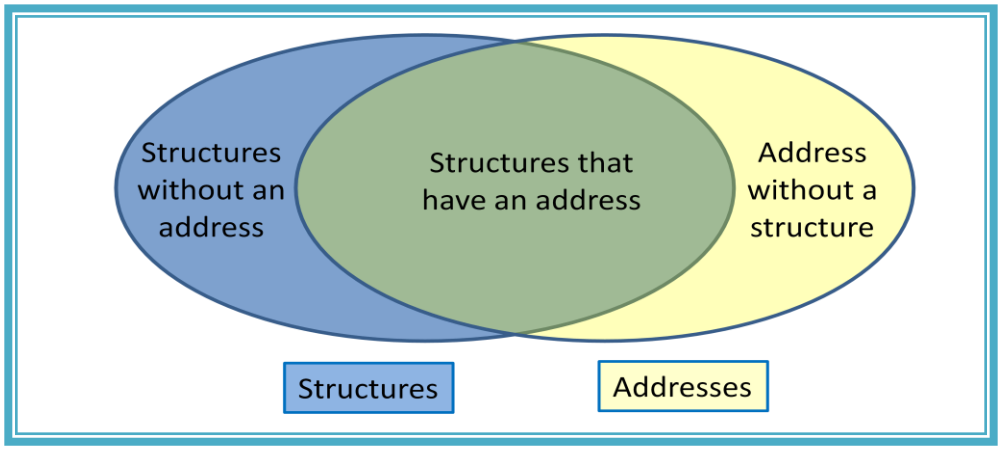

Figure 1: Venn diagram showing the intersection between Addresses and Structures. The scope of this standard indicated by the outline.

Examples of features included under this Standard are:
Structures with address: Residence on a street, business in a business park, courthouse
Address without a structure: unimproved lot, pasture, brownfield
Structures usually without an address: outbuildings (sheds, garages), seasonal roadside stands
Landmarks: Cave opening, scenic overlook, folk sculpture, signage.

The development of this standard was supported by Cooperative Agreement Number G09AC00411 from the United States Geological Survey.

1.1. Mission and Goals

The Idaho Structures and Landmarks Data Exchange Standard (ISLDES) supports a statewide dataset that is consistent with applicable state and national standards, regularly updated, seamless, appropriately accessible, and mutually beneficial to both data producers and data consumers (referred to as Structures Framework). Structures Framework is designed to be broad enough to support a wide range of functions within government and the private sector but is sufficiently focused to facilitate emergency response and planning, and thereby enhance public safety.

1.2. Description and Context of the Structures Element

Structures data is an element of the Public Safety Theme which also includes Emergency Service Zones and Critical Features (see http://gis.idaho.gov/portal/framework/framework_index.htm for more information).

1.3. Relationship to Existing Standards

This standard relates to existing standards as follows:

- Federal Geographic Data Committee (FGDC), the *United States Thoroughfare, Landmark, and Postal Address Standard* (Draft, March 2010). This standard is an all-encompassing standard for all types of addresses including international. This standard will be used as a touchstone to evaluate the efficiency and effectiveness of the ISLDES. Review of Thoroughfare and Landmarks will be included in the next version of this standard.
- Oregon Geographic Information Council (OGIC), *Geospatial Data Addressing Standard (v 1.0 Nov 5, 2004)*. This standard formed the starting point for the standards set out in this document and will ensure that standards are consistent across Oregon-Idaho state boundary.
- National Emergency Number Association (NENA) standards, including the *NENA Standard Data Formats for ALI Data Exchange & GIS Mapping* (v 8.2, June 10, 2009). These publications explain the standards used by 911 service providers in providing address information to public safety answering points (PSAP's)
- United States Postal Service *Postal Addressing Standards Publication 28* (Nov 2000). The USPS publication 28 is the mailing standard that most communities in Idaho have followed or have based their addressing updates, changes and projects on. This standard also has a list of abbreviations and when how and where to use them.
- American Planning Association (APA) *Land Based Classification Standards* for structure type and function type codes. This standard provides the APA Codes that are used in the ISLDES.
- National Structures Database (NSD). This standard provides the Feature Codes (FCODES) used for the ISLDES.

1.4. Description of Standard

This standard provides the foundation for the development, maintenance, and dissemination of structures data throughout the state of Idaho. This standard is devised to be:

- Simple, easy to understand, and logical
- Uniformly applicable, whenever possible
- Flexible and capable of accommodating future expansions
- Dynamic in terms of continuous review.

1.5. Applicability and Intended Use

This standard applies to the Structures element of the Public Safety theme of Idaho Framework. When followed, it will increase interoperability among automated geographic information systems, enable sharing and efficient transfer of data between producers and users, and build information partnerships among government institutions and the public and private sectors. This standard is intended to enable integration of structures data statewide, with special emphasis on supporting Next Generation 911 (NG911) and related public safety purposes.

1.6. Standard Development Procedures

Kootenai County, Teton County, the Coeur d'Alene Tribe and INSIDE Idaho drafted a basic data model and began collecting structure data prior to the formalization of the Public Safety Technical Working Group. The Structures workgroup has been meeting and discussing standards since March 2009. Efforts were made to identify existing Structure standards at the national level and a sampling of nearby states that would meet established objectives. Such standards were found to be either non-existent or rudimentary and not parallel to the scope of Structures Framework. However, many sources were used to develop aspects of this standard, including four different organizations' methods of structure coding, namely: The United States Forest Service's *Cartographic Feature File* (CFF); The International Building Codes structure type coding system; *The Standard Land-Use Coding Manual* (SLUCM); and the American Planning Association *Land Based Coding System* (LBCS).

A straw man standard was drafted and submitted to the Public Safety TWG for review in June 2009. A second review was submitted to the Structures Workgroup in October 2009. Feedback was incorporated. The draft standard was then presented at the Forum in June 2010. There were no objections to advancing it to the Idaho Geospatial Council Executive Committee (IGC-EC). On June 17, IGC-EC approved the draft for consideration by ITRMC. Since then, the standard was presented to the Idaho Emergency Communications Commission. Following a comment period, significant input was provided which triggered further revisions to this standard. It is now in a second round of review and comment.

1.7. Maintenance

This standard will be revised as needed and in accordance with Policy P5030.

2. BODY OF THE STANDARD

2.1. Scope and Content

The purpose of this standard is to establish the minimum requirements for the collection and integration of structures and landmark data and to facilitate the maintenance and use of that information. The content of this standard is focused on the essential data, data quality, and metadata elements required for structures data to be maintained and used locally as well as integrated for regional and statewide use. Supporting public safety uses is the principal focus when exploring new ideas and making determinations on future development.

2.2. Need

Structures and Critical Features are part of the foundation needed to support emergency services. In particular, it supports current and future 911 implementation known as enhanced 911 (e911) and NG911. As Idaho works to collect key datasets, this standard will provide the minimum specification by which the locally managed data can be integrated into regional and statewide datasets. In addition to supporting emergency services, this standard supports other uses in economic development, planning, and routine business processes.

2.3. Participation in Standard Development

The development of the ISLDES adheres to the Framework Standards Development Policy (P5030). A USGS CAP Award has expedited efforts in Idaho to plan stewardship of Structures and develop this standard. Although key participants are few, they represent diverse stakeholder groups. Outreach efforts provide opportunity for broad input in the development of this standard. For example, drafts have been made available for review and comment by stakeholders identified in a series of regional meetings. In addition, it is posted on http://gis.idaho.gov/portal/. The process will be equally broad for updates and enhancements to the standard. As with all Idaho Framework standards, public review of and comments on the ISLDES is actively sought.

2.4. Integration with Other Standards

This standard follows the same format as other Idaho Framework data standards. The specifics of this standard must integrate with the addressing, cadastral, road centerline standards. This standard includes APA codes established by the American Planning Association and FCODES defined by the USGS in the National Structures Dataset.

2.5. Technical and Operation Context

2.5.1. Data Environment

The data environment for Structures is a vector model, comprised of points with associated attribute information. The exchange format for structures data is the shapefile, which is an open published format (see http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf). In designating the shapefile as the exchange format, this standard accommodates limitations imposed by the shapefile model, such as keeping attribute (field) names to ten characters or less. Alternatively, tabular data with latitude and longitude is acceptable in .dbf, .csv, or access database formats.

2.5.2. Reference Systems

Framework datasets are distributed in Idaho Transverse Mercator (IDTM83), Idaho's single-zone coordinate system. Data contributions may be in any coordinate system; however, converting existing data to the most current realization of horizontal and vertical datums is encouraged where such conversion is feasible. As of this writing, the most current realization for horizontal coordinates is the North American Datum of 1983 (NSRS 2007); for vertical coordinates it is the North American Vertical Datum of 1988. No matter what reference system is used, it must be clearly documented in the metadata accompanying the dataset and a projection must be explicitly defined and included.

2.5.3. Global Positioning Systems
Structure Data can be collected using GPS, as long as the accuracy of the data falls within accuracy specified in 2.5.7.

2.5.4. Interdependence of Themes
The primary interdependent Framework themes are Cadastral (parcels), Transportation (road centerlines) and the Geographic Names Information Systems (GNIS) in the Reference category. Several sources may be used for determining or quality checking locations and attributes, including Cadastral (parcels and land-owner information), road centerlines and address ranges, aerial imagery, zip code boundaries, and telephone records.

2.5.5. Encoding
All GIS software used in Idaho has the capability of encoding its format to the shapefile format.

2.5.6. Resolution
Not applicable.

2.5.7. Accuracy
As with resolution, accuracy will also vary across Structures Framework, primarily due to the variety of sources. For this reason documentation of accuracy is crucial and must be documented in the metadata. The target positional accuracy is 40 feet. As the effort matures and better data becomes available, a tighter accuracy will be specified.

2.5.8. Edge Matching
Not applicable.

2.5.9. Unique Identifier
Organizations may wish to use Structures Framework in conjunction with their current and future business processes. To accommodate that need, a unique id will be maintained across the compiled database and will consist of the concatenation of the following fields: GIS_STEW and LOCAL_ID.

2.5.10. Attributes
The attributes included in this standard describe each structure or are required to manage the data. See Section 3 for minimal and optional characteristics for Structure attributes.

2.5.11. Stewardship
Perpetual maintenance and other aspects of lifecycle management are essential to Structures Framework. Details of stewardship partners, their roles and responsibilities, and stewardship design and processes will be set forth in a charter, a plan, and related documents.

2.5.12. Records Management and Archiving
Records management and archiving will be provided for with specificity in the stewardship documents established for Structures Framework.

2.5.13. Metadata

Metadata will conform to the geospatial metadata standard(s) established by the State of Idaho (S4420 Metadata Standard).

3. DATA CONTENT AND FORMAT

3.1. Minimum Graphic Data Elements

The graphic data for structures is modeled as a point feature class containing only an X and Y value**.**

3.2. Optional Graphic Elements

Not applicable.

3.3. Minimum Attribute or Non-Graphic Elements

The attributes required for source contributions are:

FIELD NAME	DATA TYPE	LENGTH	REQUIRED	SHORT DESCRIPTION	EXAMPLE
GISSTEW	TEXT/STRING	20	yes	The steward of the data	IDAHOGIS
APACODE	INTEGER	5	Yes	This code comes from the modified APA code – Idaho APA codes – Appendix C	1000; 2000; 3000; 4000; 4110; 4510; 4520; 4530; 4600; 5000; 6000; 6900; 7000; 8000 Required: 4110 (hospital); 4200 (School); 4510 (Fire Station); 4520 (Police Station); 4530 (Emergency Operation Center); 4600 (Jail, penitentiary, correctional facility)

Use of abbreviations in the FGDC standard is discouraged to avoid misinterpretation. However, the ISLDES does allow specific abbreviations. When and where abbreviations are permitted is explained in section 3.5. Abbreviations are acceptable until such time as this standard adopts the FGDC reasoning.

The following attributes are automatically calculated during horizontal integration:

FIELD NAME	DATA TYPE	LENGTH	REQUIRED	SHORT DESCRIPTION	EXAMPLE
FULL_ADDRESS	*TEXT/STRING*	*75*	*no*	*Calculated during aggregation*	*89 N Main St; 455 N 5000 W;*
CARTO_TYPE	*TEXT/STRING*	*15*	*no*	*Calculated during aggregation*	*Residential; Commercial; Public Assembly; Institutional or community facility; Transportation; Utility; Military; Agricultural*
STRUCTURE_TYPE	*TEXT/STRING*	*15*	*no*	*Calculated during aggregation*	*Hospital; School; Fire Station; Police Station; Emergency Operation Center; Jail, detention, correctional facility; etc.*
LAT	*TEXT/STRING*	*11*	*no*	*Calculated during aggregation*	*47.123456*
LONG	*TEXT/STRING*	*11*	*no*	*Calculated during aggregation*	*-116.123456*
FEATCODE	INTEGER	5	*yes*	*NSD code Generated from Idaho-APA codes using a cross-walk table.*	
DATE_SUBMTD	INTEGER	8	*yes*	*Calculated during aggregation*	10302010

3.4. Optional Attribute and non-Graphic Elements

A complete list of attributes is shown below. The attributes in shaded boxes are optional.

FIELD NAME	DATA TYPE	LENGTH	REQUIRED	SHORT DESCRIPTION	EXAMPLE
GIS_STEW	TEXT/STRING	20	yes	The steward of the data	IDAHOGIS
APA_CODE	INTEGER	5	yes	[a]) This field requires the following values when applicable: 4110 (hospital); 4200 (School); 4510 (Fire Station); 4520 (Police Station); 4530 (Emergency Operation Center); 4600 (Jail, penitentiary, correctional facility); 9999 (To be determined)	1000; 2000; 3000; 4000; 4110; 4510; 4520; 4530; 4600; 5000; 6000; 6900; 7000; 8000
F_CODE	INTEGER	5	yes	The complete list of FCODES can be found in Appendix C. Note that there are no FCODES for residential structures. FCODES are specified in the National Structures Database.	See Appendix C
ADDPFX	*TEXT/STRING*	*3*	*NO*	*Address Prefix – rare*	*N,S,E,W,NE,NW,SE,SW, ½, ¼ A, B, C, . . .*
ADDNUM	*LONG*		*no*	*Address number*	*1; 26; 125; 1501; 10545*

	INTEGER				
ADDSFX	*TEXT/STRING*	*3*	*no*	*Address Suffix*	*N,S,E,W,NE,NW,SE,SW, ½, ¼ A, B, C, . . .*
STPREMOD	*TEXT/STRING*	*6*	*No*	*Street pre-modifier*	*Old, New*
STPREDIR	*TEXT/STRING*	*2*	*no*	*Street Pre direction*	*[b]) N,S,E,W, NE, NW, SE, SW*
STPREFIX	*TEXT/STRING*			*Street PreType*	*[b]) ST, RD, CIR, DR*
STNAME	*TEXT/STRING*	*40*	*no*	*Street name*	*MAIN*
STSUFFIX	*TEXT/STRING*	*4*	*no*	*Street name suffix type*	*[b]) ST, RD, CIR, DR*
STPOSTDIR	*TEXT/STRING*	*2*	*NO*	*Street post directional*	*[b]) N,S,E,W, NE, NW, SE, SW*
STPOSTMOD	*TEXT/STRING*	*6*	*NO*	*Street post modifier*	*Old, New, A, B, C, etc*
PRUNITTYPE	*TEXT/STRING*	*10*	*No*	*Pre Unit Type Building/Floor [c])*	*b) BLDG,FLR, UNIT*
PRUNITID	*TEXT/STRING*	*10*	*No*	*Pre Unit Identifier BLDG or FLOOR number or letter. This can represent an individual or range of addresses*	*1 ,2, A, B, 101, 201, 1 – 12, etc.*
SBUNITTYPE	*TEXT/STRING*	*10*	*no*	*Sub Unit Type*	***APT; STE; BLDG*
SBUNITID	*TEXT/STRING*	*10*	*no*	*Sub Unit. This could be used to represent fractional addresses if an entity doesn't have a cleaned postal addressing scheme. This can also be used to denote ranges of addresses in the case of multiple apartments (e.g. APT 1-35).*	*# 10; 10, ½, A, B, C, 1 – 10, A – H, 100 – 220, etc*
FLOORS	*TEXT/STRING*	*10*	*NO*	*Number of Floors in building*	
COMMNAME	*TEXT/STRING*	*20*	*no*	*Community, City, Postal Community*	*Rexburg; Boise; Moscow*
STATE	*TEXT/STRING*	*2*	*no*	*State*	*ID*
ZIP_4	*INTEGER*		*no*	*Zip Code (+ 4 if needed)*	*83440; 834401526 (+4)*
LANDMARK	*TEXT/STRING*	*50*	*NO*	*Name of landmark/location*	*Dworshak Dam, Memorial Bridge*
PRIMSTRUCT	*TEXT/STRING*	*5*	*No*	*[d])*	*Prim/Sec*

PRIMADD	*TEXT/STRING*	*5*	*No*	*[e])*	*Prim/Sec*
LOCALID	*TEXT/STRING*	*12*	*no*	*Local ID if used by contributor*	*1; ADA-1*
PHOTO	*RASTER*		*no*	*Photo(s) of the structure*	*server/structurepics/1234.jpg*
COMMENTS	*TEXT/STRING*	*250*	*no*	*Comments relevant to the structure*	*Jo's Auto Body; Pizza Hut*
GNISID	*TEXT/STRING*		*no*	*Must be obtained from USGS*	*22540*
FULLADDRSS	*TEXT/STRING*	*75*	*no*	*Calculated during aggregation*	*89 N Main St; 455 N 5000 W;*
CARTOTYPE	*TEXT/STRING*	*15*	*no*	*Calculated during aggregation*	*Residential; Commercial; Public Assembly; Institutional or community facility; Transportation; Utility; Military; Agricultural*
STRUCTTYPE	*TEXT/STRING*	*15*	*no*	*Calculated during aggregation*	*Hospital; School; Fire Station; Police Station; Emergency Operation Center; Jail, detention, correctional facility; etc.*
LAT	*TEXT/STRING*	*11*	*no*	*Calculated during aggregation*	*47.123456*
LONG	*TEXT/STRING*	*11*	*no*	*Calculated during aggregation*	*-116.123456*

[a]) APA -Http://myapa.planning.org/LBCS/GeneralInfo/

[b]) USPS Publication 28

[c]) PRUNITTYPE: This field is used to handle addressing structures which incorporate several buildings or floors that also have SUB_UNITS (i.e. BLDG 1 UNIT 4, FLR 7, STE 16) otherwise just use the SUB_UNIT_(TYPE/ID) fields if there are no sub units to the building or floors. The preferred method would be to incorporate the building/floor with the address. Such as: Unit 716 could mean 7th floor 16th unit. Unit A12 – Building A Room 12. We included this field to give entities the flexibility to represent the address either way.

[d]) PRIMSTRUCT: If multiple buildings share a common address, but are not the primary address, this field is used to denote this relationship. For instance: The home on a piece of property has a detached garage and a shed. Each structure shares the same address as the home, but it is not the primary structure for that address. Each structure would have its own unique structure ID but share a common Address ID.

[e]) PRIMADD: If multiple structure points are placed on top or adjacent to each other to represent multiple address for a single structure this field is used to distinguish the primary address point. For instance if an apartment building has 35 units, 35 structure points would be place on each other or in the relative location of their entrances. One would be designated as the primary address and the primary structure (the manager's apt or apt offices).

Consistent codes assure the resulting data set can be reliably queried and mapped. There are two accepted classification systems:

1) The American Planning Association's (APA) Land–Based Classification Standard (LBCS) for structures. A complete list of APA codes is posted at *[insert link].*

2) The USGS has assigned F_CODES for use in their National Structures Dataset. A complete list of structures related F_CODES is posted at *[insert link].*

The structures committee developed a modified APA code system. This system combines the two systems and adds additional codes as needed by the GIS community. See Appendix C.

3.5. Attribute Domains and Examples

1) ADDPFX: Can be used for fractional addresses, leading zeros, letters or other numbers when not related to a multiple unit structure.
2) ADDSFX: Can be used for fractional addresses, letters or other numbers when not related to a multiple unit structure.
3) STPREMOD: Street Name Modifier - Old, New, etc
4) STPREDIR: Pre-directional based off of Geographical Directional abbreviation from USPS Publication 28 standards Appendix B page 53 (April 2010)
5) STPRFX: Street Prefix: example Ave A, domain is the Street Abbreviations from USPS Publication 28 standards Appendix C , page 57 (April 2010)
6) STSFX: Street Suffix: example Grant Blvd, domain is the Street Abbreviations from USPS Publication 28 standards Appendix C, page 57 (April 2010)
7) STPOSTDIR: Post Directional, based off of Geographical Directional abbreviation from USPS Publication 28 standards Appendix B page 53 (April 2010)
8) PRUNITTYPE: The Sub address type represents the address when there are separate buildings or floors with sub units in the building or floor. For instance: 1230 Main St **Fl 6** Ste 10 or 510 Grant St Bldg A, Rm 6. If the structure does not have a breakdown of this type, use only the Sub Unit Type and Sub Unit ID to designate multiple units. The domain is the Secondary Unit Designators from USPS Publication 28 standards Appendix C2 page 70 (April 2010)
9) PRUNITID: The Sub Address identifier is used to attribute the multiple floors or buildings of a single address location. In the case of multiple buildings or floors, designate the range in its entirety. Example Fl= 6 or Fl 1 – 8.
10) SUBUNITTYPE: Sub Unit type represents addresses for a multiunit structure or used where a single address is used for a multiple lot/space location, such as a trailer park. The domain is the Secondary Unit Designators from USPS Publication 28 standards Appendix C2 page 70 (April 2010)
11) SUBUNITID: The sub unit identifier this identifies the units in a multi unit structure or multiple lot address location. In the case of the Multi-unit building the field can be used to designate the range of applicable addresses. Example: Ste 101 or Ste 101–212.
12) STATE: Abbreviated as designated in the USPS Publication 28 standards Appendix B page 53 (April 2010).

4. DATA COMPILATION PRACTICES AND MAPPING RULES

4.1. Placement of Structure Point

The preferred placement of a point is at the entrance of a structure, point of access to the location. However, different placement conventions are acceptable and must be described in the metadata.

4.2. Multiple Land Classification Codes for Single Structure

Existing APA codes, as well as additional APA codes generated by the APA code review committee (sub-committee of the Structures TWG), indicate multiple uses for one structure. For example, APA code 2300 indicates an office or store building with a residence on top.

Structure classification based on structure type and function is attributed to indicate the use or usage of a structure at a location. The standard being applied is from the American Planning Association's Land Based Classification Standards (LBCS). The Idaho standard has been modified to handle structure/functions not noted by the APA standard, reflected in Appendix C.

Primary Activity Codes
1000 Residential Buildings
2000 Commercial Buildings
3000 Public Assembly Structures
4000 Institutional or Community Facilities
5000 Transportation Facilities
6000 Utility and other Non-building Structures
7000 Military Structures
8000 Sheds, Farm Buildings, Agricultural Facilities
9000 No Structure

Required USGS Features Codes
4110 Hospital
4200 School
4510 Fire Station
4520 Police Station
4530 Emergency Operation Center
4600 Jail, Penitentiary Correctional Facility
9999 Unknown

Primary Activity codes are the most general coding for structure type. The features codes are required by the USGS.

The use of a more specific code, such as 1121 of a duplex structure rather than 1000, is encouraged. If more than one code is indicated for a structure, additional fields may be added, such as a primary APA code, APACODE2, APACODE3, etc. Structures Framework will reflect the primary structure code in the first position as designated in the metadata.

4.3. Multiple Address Points for a Single Structure

Multiple points on a single structure are permitted as long as each of those points has a different address. Use the PRIMADD attribute to indicate which one of those multiple point records should be considered the primary address point (PRIMADD = PRIM) and which records are secondary addresses (PRIMADD = SEC).

If a structure has multiple addresses, the addresses can be represented in a related table, while the structure dataset represent a range of addresses in that structure. Likewise if a structure has more than one distinct (unique) address, the same approach can be used, however Structures Framework would only show the 'primary' structure point and address.

The PRUNITTYPE and PRUNITID can be used to handle addresses which incorporate multiple floors and units (as frequently found in apartment complexes). See paragraph 3.4 listing the Optional Attribute and non-Graphic Elements for details about each of the attributes. APA codes will be created as needed and documented in Appendix C.

4.4. Multiple Structures Associated with a Single Address

Each structure should be identified as its own point feature, each with an identical address. Use the PRIM_STRUCT attribute to flag the primary structure associated with the address as "PRIM" and all other, secondary structures as PRIM_STRUCT = "SEC."

4.5. Data Quality

Data quality considerations for structures:

- Structures should have addresses where applicable.
- Structures should be up-to-date and reviewed regularly.
- All applicable attribute values should be populated.

APPENDIX A: References

1. American Planning Association (APA). *Standard Land Use Coding Manual (SLUCM)*. Online, http://myapa.planning.org/LBCS/OtherStandards/Downloads/slucm.pdf

2. American Planning Association (APA). Chicago, Illinois. *Land-Based Coding Standards (LBCS) Categories*. Online, http://www.planning.org/LBCS. (NOTE: See attached document entitled *"RLBCSStructureTabbedWithDefs.pdf"* as a temporary source for APA/LBCS codes until the URL provided is functioning properly.)

3. Environmental Systems Research Institute (ESRI). Online, http://www.esri.com

4. Federal Geographic Data Committee (FGDC). October 2009. *Geographic Information Framework Data Content Standard; Part 0: Base document.* Online, http://www.fgdc.gov/standards/projects/FGDC-standards-projects/framework-data-standard/GI_FrameworkDataStandard_Part0_Base.pdf

5. Federal Geographic Data Committee (FGDC). *United States Thoroughfare, Landmark, and Postal Address Standard* (Draft, Feb. 2010). Online, http://www.fgdc.gov/standards/projects/FGDC-standards-projects/street-address.

6. Florida Division of Historical Resources, July 2004. October 2009. *Metadata for Standing Structure GIS Data Layer*. Online, http://www.fnai.org/arrow/data/metadata/hist_bldg.htm

7. Idaho Geospatial Office. November 2009. *Cadastral Reference TWG; "Parcels IGC June 2008"* slide presentation. Online, http://gis.idaho.gov/framework.htm.

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10. International Building Code, International Code Council, 2006, Section 302.1, pg 23.

11. National Emergency Number Association (NENA) Technical Committee Chairs. June 10, 2009. *NENA Standard Data Formats for ALI Data Exchange, MSAG & GIS*. Online, http://www.nena.org/sites/default/files/02-010_20080108_v8.2.pdf

12. National States Geographic Information Council (NSGIC). *Sharing and Improving Critical Infrastructure Data-December 18, 2006.* Online, http://www.nsgic.org/hottopics/hsip_ci_geospatial_data_sharing_program_121806.pdf

13. State of Oregon. *Stewardship Charter (Template)*. Online, http://www.oregon.gov/DAS/EISPD/GEO/docs/stewardship/ModelStewardshipCharterv03.pdf

14. Structures Stewardship Plan (Draft, October 2010) and related documents. http://gis.idaho.gov/portal/Framework/cadastral.htm

15. United States Postal Service. *Publication 28*. Online, http://pe.usps.gov/cpim/ftp/pubs/Pub28/pub28.pdf

16. United States Geological Survey (USGS). *Homeland Security Infrastructure Program (HSIP) Freedom Initiative-June 2008*. Online, http://www.naco.org/Template.cfm?Section=information_technology1&template=/ContentManagement/ContentDisplay.cfm&ContentID=30223

17. United States Forest Service: Salt Lake City; Pacific Southwest Region. *Table 121 - Cartographic Feature File (CFF) Code. Updated March 6, 2002.* Online, http://www.fs.fed.us/r5/rsl/projects/frdb/tables/table121.html

APPENDIX B: Glossary

Address
An address specifies a location by reference to a thoroughfare or a landmark; or it specifies a point of postal delivery. U.S. Thoroughfare, Landmark, and Postal Address Data Standard (Feb. 2010).

Address Point
An address point may be used synonymously with *structure* but is broader as it may encompass both an addressable structure and structures that usually are not assigned thoroughfare addresses.

Encoding
The recording or reformatting of data into a digital format. Data may be encoded to reduce storage, increase security, or to transfer it between systems using different file formats. In GIS, analog graphic data, such as paper maps and images are encoded into computer formats by scanning or digitizing. (ESRI)

Landmark
A prominent or conspicuous object on land that serves as a guide, especially to ships at sea or to travelers on a road; a distinguishing landscape feature marking a site or location. *Dictionary.com.*

Structure
A structure is defined as "*that which is built or constructed."* International Building Code (IBC), 2006.

APPENDIX C: APA Codes, NSD Codes, Code Crosswalk

See associated spreadsheet.